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JP UTILITY MODEL 47-33272A

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SPECIFICATION

Title: HEAT-RESISTANT MULTI-PLY WOVEN FABRIC

Scope of Claim for Utility Model Registration

A heat-resistant multi-ply woven fabric comprising a front side first layer comprising heat-resistant polymer fibers, for example, aromatic polyamide heat resistant fibers, in an content of 60% or more, and having a textile structure and a second layer comprising synthetic fibers having a lower heat shrinkage than that of the first layer in a content of 50% or more and having a textile structure or another layer connected to the second layer, wherein the second layer or the second layer and the other layer are shrunk more than the first layer to an extent such that an air space is formed between the first layer and the second layer.

Brief Description of Drawings

Fig. 1 shows a cross-sectional profile of the heat-resistant multi-ply woven fabric of the present device

before being heat-treated, and

Fig. 2 shows a cross-sectional profile of the heat-resistant multi-ply woven fabric of the present device after being heat-treated.

1_1 ... Warp yarn from which a weave structure of the front side first layer is formed

2_1 ... Weft yarn from which the weave structure of the front side first layer is formed

1_2 ... Warp yarn from which the second layer is formed

2_2 ... Weft yarn from which the second layer is formed

3 ... Bonding yarn

Passage 1

Page 3, line 6 to page 4, line 12

--The warp yarn (1_1) and weft yarn (2_1) of the first layer are yarns comprising heat-resistant inorganic fibers, for example, asbestos fibers, metal fibers or glass fibers or heat-resistant synthetic fibers, namely, fibers having excellent thermal property, for example, NOMEX (a trademark of heat-resistant nylon made by DU PONT, U.S.A.) in a content of 60% or more (preferably 100%) and may be a spun yarn or a filament yarn.

The warp yarn (1_2) and weft yarn (2_2) of the second layer are filament yarn or 100% spun yarn or mixed spun

yarn formed from synthetic fibers, for example, polyester fibers, and must exhibit, when heat-treated, a higher shrinkage than that of the warp and weft yarns of the first layer.

The inorganic fibers and heat-resistant fibers for the first layer has excellent heat stability and exhibits a shrinkage in boiling water of about 0% and a shrinkage at a dry temperature of 200°C of about 0%.

Compared with this, the synthetic fibers for the second layer have a high shrinkage both in boiling water and at a high dry temperature. Accordingly, a difference in heat shrinkage is provided between the first layer and the second layer to cause the second layer and the other layer to shrink to a higher extent than the first layer and to form air spaces between the first layer and the second layer so that the resultant woven fabric exhibits increased heat insulation.

The bonding yarn is preferably formed from heat-insulating fibers, but not limited to the heat-insulating yarn.

Preferably, the difference in shrinkage between the first and second layers is 3% or more. The shrinking is preferably effected by a boiling water-treatment or dry heat treatment.

The air spaces can be easily formed by bonding the first and second layers to each other at every two or more

warp and weft yarns.--

Fig. 1

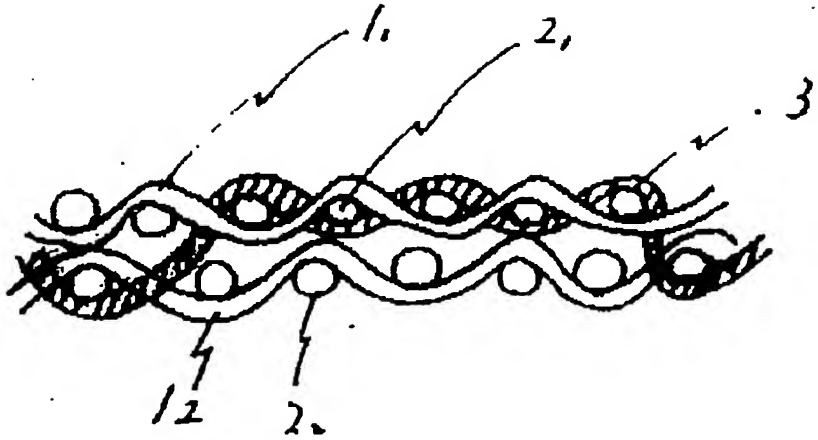
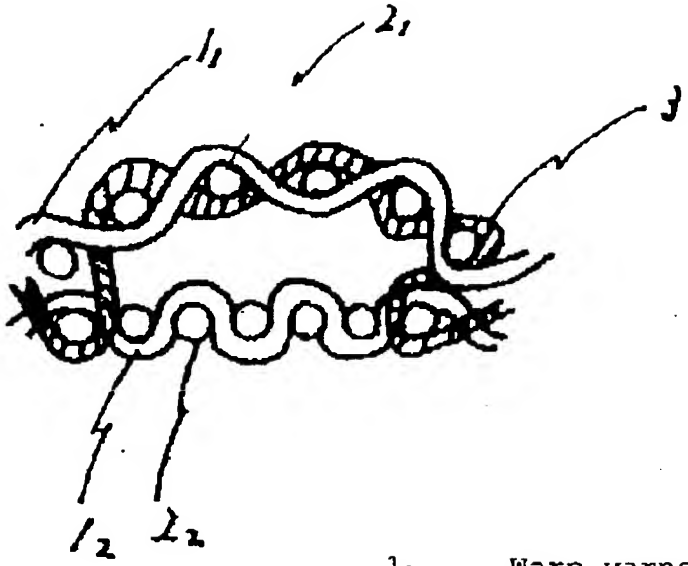


Fig. 2



1_1 ... Warp yarns for first layer
2_1 ... Weft yarns for first layer
1_2 ... Warp yarns for second layer
2_2 ... Weft yarns for second layer
3 ... Bonding yarns